WEST

Freeform Search

Database: US Patents Full-Text Database
US Pre-Grant Publication Full-Text Database
JPO Abstracts Database
EPO Abstracts Database
Derwent World Patents Index
IBM Technical Disclosure Bulletins

Term:

Display: 10 **Documents in Display Format:** KWIC **Starting with Number** 1

Generate: ○ **Hit List** ◉ **Hit Count** ○ **Side by Side** ○ **Image**

Search | Clear | Help | Logout | Interrupt

Main Menu | Show S Numbers | Edit S Numbers | Preferences | Cases

Search History

DATE: Sunday, October 05, 2003 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
DB=USPT; PLUR=YES; OP=ADJ			
L8	L5 and (address adj1 book)	1	L8
L7	L5 and (user adj1 ID)	1	L7
L6	L5 and userID$	1	L6
L5	6000000.pn.	1	L5
L4	6000000.pn. and identification$	0	L4
L3	6000000.pn.and identification$	0	L3
L2	L1 and identification$	0	L2
L1	5832489.pn.	1	L1

END OF SEARCH HISTORY

WEST

Generate Collection | Print

Search Results - Record(s) 1 through 1 of 1 returned.

☐ 1. Document ID: US 5974238 A

L9: Entry 1 of 1 File: USPT Oct 26, 1999

DOCUMENT-IDENTIFIER: US 5974238 A
TITLE: Automatic data synchronization between a handheld and a host computer using pseudo cache including tags and logical data elements

US Patent No. (1):
5974238

Brief Summary Text (9):
To balance between the ease of reading and editing files on a desktop computer and the convenience of collecting information and operating the palmtop or handheld when the user travelled, the user typically purchased both the desktop computer and the palmtop computer. The two platforms were linked via one or more communication paths, including paths through a modem, a parallel port, a serial port, or a cradle assembly connected to the host computer. Further, various wireless communication techniques, such as radio or infrared communication may be used. In the event that a cradle was used, when the handheld computer was in the cradle and actively connected to the host computer, the handheld computer typically entered a mode to update data in the host computer and itself.

Brief Summary Text (15):
An apparatus is disclosed for performing dynamic synchronization between data stored in a handheld computer and a host computer, each having a plurality of data sets including at least one common data set, each computer having a shared copy of the common data set. The handheld computer has a processor, a communication port, and a data synchronization engine. The data synchronization engine exists on both the handheld and host computer and has a pseudo-cache and one or more tags connected to the pseudo-cache which can be implemented in either hardware or software. Data is synchronized when a write to system memory results in the creation, modification or deletion of data on either the handheld or host computer. By strict adherence to a set of protocols, data coherency is achieved because the system always knows who owns the data, who has a copy of the data, and who has modified the data. The data synchronization engine resolves any differences in the shared data set and facilitates the storage of the shared data set in the host computer and in the handheld computer. Data synchronization may occur using either wireless or wireline communications transports. In the wireless case the transports could be two-way paging systems, cellular networks and wireless LANS such as ARDIS and RAM, as well as infrared-based LANs. In the wireline case the communication transports could be serial, parallel, POTs and LANs and WANs .

Detailed Description Text (6):
In FIG. 1D the handheld computer H is shown as being wirelessly connected to the host computer C via a wireless carrier. The wireless carrier may be based on the global system for mobile communications (GSM) standard, which is a digital cellular standard or other cellular technologies such as circuit switches or CDPD. Alternatively, the wireless carrier may be based on a two-way paging standard such as the personal Air Communications Technology (pACT). pACT is a narrowband, 900 Mz range personal communications system (PCS) available from PCSI--Cirrus Logic Inc. and AT&T Wireless Services Inc. Further, a ReFLEX paging protocol, currently in use with SkyTel--Mtel, Inc., from Motorola Inc. of Schaumburg, Ill. can be used as well.

Detailed Description Text (7):
The present invention contemplates that equivalent wireless transmissions include all forms of radio frequency as well as infrared communication as discussed in the Infra-Red Data Association (IRDA) standard. The IRDA specifications provide guidelines for link access, link management and for the physical transfer of data bits. The link access mechanism provides guidelines for the software which looks for other machines to connect or to sniff, to discover other machines, to resolve addressing conflicts, and to initiate a connection, to transfer data, and to cleanly disconnect. The link access standard specifies a frame and byte structure of the infrared packets as well as the error detection methodology for the infrared communication. The IRDA specifications for operating distance, viewing angle, optical power, data read, and noise immunity enable physical interconnectivity between various brands and type of equipment, such as the desktop computer C and the handheld computer H.

Detailed Description Text (8):
Turning now to FIG. 1E, another communication link between the desktop computer C and the handheld computer H is shown. FIG. 1E shows the wireline technology--Internet combination to augment the wireless networks which may lack a ubiquitous infrastructure. FIG. 1E is similar to FIG. 1D, with the addition that an Internet link is interposed between the desktop computer C and the wireless carrier. In FIG. 1E, the wireless carrier communicates with an Internet service provider via a suitable protocol such as TCP/IP protocol. Originally developed as a reliable computer network for connecting research institutions and military sites, the Internet has become the world's most widely used computing network, where information is quickly and easily shared. Typically, data transmitted via the Internet via the World Wide Web still resembles that of the wireless packets, as the typical Web message size is small. Thus, in addition to wireless carriers, the handheld computer of the present invention can communicate with the desktop computer C via land lines, via wireless lines, or other means, including the Internet and variants thereo, including "intranets", or intra-corporation networks. These communication media meld computing power with network and wireless access, offering users significant leaps in productivity and accessibility.

Detailed Description Text (10):
Referring now to FIG. 2, various typical internal components in the handheld computer H are shown. The LCD panel 26, with an accompanying backlight 112, overlays the remaining components. An antenna (not shown) for use as a radio frequency wireless communications link can be located on one edge of the LCD panel 26. The PCMCIA cage 38 is located adjacent to the battery cartridge 42 and a power supply 50, which also contains a receptacle 52 for receiving a plug from an external battery charger through the hole 32. An auxiliary battery 54 is located adjacent the power supply 50 for ease of use. Preferably a stiffening rib 55 is provided adjacent the auxiliary battery 54 and the PCMCIA cage 38 to allow robustness of the housing 20 and support of the LCD panel 26. Two planar circuit boards 56 and 58 are located in a parallel arrangement at the end of the handheld computer H. Preferably one of the circuit boards 58 contains the receptacles 46 and 48, with the two circuit boards 56 and 58 containing the necessary electrical circuits for general operation of the computer H.

Detailed Description Text (13):
A combination chip 104 is connected to the microprocessor 100 and to an interface bus 106 provided from the microprocessor 100 and supplemented by the combination chip 104. Preferably the combination chip 104 includes a number of various elements necessary for operation of the computer H. For example, in the preferred embodiment, the combination chip 104 includes a complete video controller system which is used to interface with the LCD panel 26, as well as the video memory utilized with the video system. Preferably the combination chip 104 also contains a memory and refresh controller; a PCMCIA interface; a UART for conventional serial port use; a parallel port; a real time clock; various timers conventionally utilized in a personal computer system; a programmable interrupt controller, preferably one with reduced capabilities; a memory decoder to allow access to the various internal and external components; a keyboard interface; speaker driver logic and power control logic.

Preferably the combination chip 104 also includes UART/parallel port/cradle port switching detection logic and interface circuitry to allow the use of wireless communications with the computer H, such as radio frequency or infrared links. Further, the combination chip 104 contains the digitizer logic utilized with a digitizer 110 which receives and cooperates with the pen 28. Therefore the vast majority of the specialized functions utilized in the handheld computer H are contained in the combination chip 104.

Detailed Description Text (17):
Wireless interface circuitry 120 is also connected to the DSP 118. The exact wireless interface circuitry 120 depends upon the particular type of interface desired. For example, if an infrared interface is desired, then the circuitry 120 is connected to an infrared transceiver 60 to allow communications with suitable external units. These external units can either be connected to an individual host computer or can be connected to a server node of a network environment. Alternatively, the wireless circuitry 120 can be adapted for radio frequency operation, preferably spread spectrum type techniques, as are known in wireless local area network units, or could conform to various cellular telephone or packet radio protocols such as the previously discussed GSM and pACT protocols. The DSP 118 performs the necessary conversions and protocol handling of the particular wireless communication techniques utilized to allow direct connection to the bus 106 for simple access by the microprocessor 100.

Detailed Description Text (30):
Turning now to FIG. 6B, the software running on the handheld computer H for synchronizing data is shown in greater detail. In FIG. 6B, the corresponding modules to those of FIG. 6A are shown for the handheld computer H. A communications module 213 runs on the handheld computer H. The communications module 213 is in turn connected to a coherency protocol engine 211, which is in turn connected to a PIM data synchronization module 215. The data synchronization module 215 connects to the data synchronization API 223, which in turn communicates with a scheduler PIM 225, a phone list PIM 229 and a travel agent PIM 233 on the handheld computer H. The coherency protocol engine 211 essentially examines or parses the incoming packets from the communications module 213, which receives mesages via the landline or wireless connection to the handheld computer H. The parsing pprocess preferably examines a command/ID field indicating that the incoming packet is part of the data coherency process. Upon detecting the receipt of a coherency packet, the coherency protocol engine 211 passes the packet to the data synchronization engine 215 for further processing. Preferably, the basic data element in the present invention is not a file but rather an element similar to a record or field which is related to the familiar cache sub-block or cache line in a symmetric-multiprocessor (SMP) system model. Modern SMP computer architectures represent coherent systems which utilize caches to achieve data coherency (in addition to reducing memory latency). By strict adherence to a set of protocols, data coherency is achieved because the system always knows who owns the data, who has a copy of the data, and who has modified the data. Essentially, in the SMP model, data is synchronized when the modified data is written from cache back to main memory and/or when the associated cache tag is invalidated. In the event that a processor requests data which has been modified by another processor and has yet to be written back to memory, the processor cache which contains the modified data supplies the data to the other processor's cache to maintain data coherency. Likewise, the desktop C and handheld computer H of the present invention mimic the SMP coherent behavior by attacking the synchronization problem in a real-time versus batch-mode manner.

Detailed Description Text (65):
From step 311, the routine creates a desktop packet in step 312. In step 314, the routine of FIG. 8 sends the packet created in step 312 to the desktop computer C in step 314. After transmitting the packet to the desktop computer C via the landline or the wireless communication device in step 314, the routine of FIG. 8 waits for an acknowledgment packet to be transmitted from the desktop computer C in step 316. If the desktop acknowledgment packet is not received, the routine puts itself to sleep in step 318, which essentially puts the routine in an idle mode to be waked up at predetermined periods. After waking up from step 318, the routine once more loops back to step 316 to check for receipt of the acknowledgment packet. From step 316, if the acknowledgment packet has been received from the desktop computer C, the

routine clears the exclusive bit in the handheld tag in step 320 before it exits FIG. 8.

Detailed Description Text (91):
Further, the handheld computer H can automatically synchronize files and/or data with a host computer C when remotely located and continuously synchronizes common data sets when directly connected to the host computer C via wireless means or via a wireline interface. This automatic synchronization greatly improves the usefulness of the handheld computer H as a portable device.

Other Reference Publication (4):
Vendetti, Don, Wireless Tutorial--Narrowband PCS: Two-Way Messaging, Wireless for the Corporate User (1996).

Other Reference Publication (13):
Wirbel, Loring, "Alliance to spin a wireless Web", Electronic Engineering Times, Jul. 15, 1996, pp. 1,8.

Other Reference Publication (14):
Moore, Mark, "Users of Pegasus will get choice of wireless carriers", PC Week, Jul. 22,1996, pp. 9,40.

Other Reference Publication (17):
Grace, Elden, "RF Filter Technology for Wireless Communications", Wireless Design & Development, p. 8.

Generate Collection Print

Term	Documents
WIRELESS.USPT.	37324
WIRELESSES.USPT.	9
(8 AND WIRELESS).USPT.	1
(L8 AND WIRELESS).USPT.	1

Display Format: KWIC Change Format